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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Cyril Delattre

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MCKENNA LONG & ALDRIDGE LLP  
1900 K STREET, NW  
WASHINGTON, DC 20006

EXAMINER

FORMAN, BETTY J

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/577,274	DELATTRE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	BJ Forman	1634	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-33 is/are pending in the application.
- 4a) Of the above claim(s) 26-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22, 25 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 August 2010 has been entered.

### ***Status of the Claims***

2. This action is in response to papers filed 20 August 2010 in which claim 1 was amended, claims 23-24 were canceled and claim 33 was added. All of the amendments have been thoroughly reviewed and entered.

The previous rejections in the Office Action dated 24 February 2010 are withdrawn in view of the amendments.

Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection are discussed.

Claims 1-22, 25 and 33 are under prosecution.

***Claim Objections***

3. Claim 25 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim depends from claim 24 which has been canceled.

For purposes of examination, the claim will be interpreted as being dependent upon Claim 1.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 5, 7, 10-14, 17, 25 and 33 are under 35 U.S.C. 102(e) as being anticipated by Schleifer et al (2004/0119013, filed 23 December 2002).

Regarding Claim 1, Schleifer teaches a work device comprising a sample holder (e.g. 43, ¶ 38) and a substrate (e.g. 41, ¶ 38-45) that is non-wetting for the liquid of interest (¶ 45) and a plurality of work zones (40) on the active surface surrounded by a border wherein the border is non-wetting for the liquid of interest (¶ 66). Schleifer

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teaches that liquid introduced into the sample holder, the liquid of interest covers the work zone and that the borders have geometry such that when liquid of interest is extracted, the liquid remains within the work zone (§ 81). Schleifer further teaches the borders are formed in relief (§ 69) and such that when sample is delivered to the substrate using a pipette or syringe (§ 81) thereby providing the means for introducing and extracting liquid as claimed and as defined by the instant specification (page 29, lines 17-24).

The means for introducing the liquid of interest into the box may comprise any appropriate means known to a person skilled in the art for injecting a liquid into a box, particularly those used in the field of on-chip laboratories and Microsystems. These introduction means may be selected, for example, from a syringe, a pipette, a micropipette, an injection pump, etc.

Regarding Claim 2, Schleifer teaches the work zone is on the same plane as the active surface i.e. the interior area is defined by the fluid retaining structure and substrate surface (§ 50)

Regarding Claim 5, Schleifer teaches the work zone is used as a MALDI sensor (Abstract).

Regarding Claim 7, Schleifer teaches the work zone is a zone for detecting a biological species in a sample (§ 76-77).

Regarding Claim 10, Schleifer teaches the work zone is non-wetting for the liquid of interest (§ 45).

Regarding Claim 11, Schleifer teaches the substrate is made of an organic polymer, plastic, glass, silicon (§ 46).

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Regarding Claim 12, Schleifer teaches the substrate is made of polycarbonate (§ 46).

Regarding Claim 13, Schleifer teaches the substrate is made of aluminum (§ 46).

Regarding Claim 14, Schleifer teaches the borders have a shape selected from e.g. square rectangle, oval (§ 52).

Regarding Claim 17, Schleifer teaches the borders are formed by molding (§ 69). However, it is noted that the instantly claimed method of making the borders does not define the borders over a prior art method using a different method.

Regarding Claim 25, Schleifer teaches the device of Claim 1 wherein the substrate comprises nucleic acids, proteins or cells (§ 77).

Regarding Claim 33, Schleifer teaches a work device comprising a sample holder (e.g. 43, § 38) and a substrate (e.g. 41, § 38-45) that is non-wetting for the liquid of interest (§ 45) and a plurality of work zones (40) on the active surface surrounded by a border wherein the border is non-wetting for the liquid of interest (§ 66). Schleifer teaches that liquid introduced into the sample holder, the liquid of interest covers the work zone and that the borders have geometry such that when liquid of interest is extracted, the liquid remains within the work zone (§ 81). Schleifer further teaches the borders are formed in relief (§ 69) and have a height of 5-20  $\mu\text{m}$  (§ 57) and such that when sample is delivered to the substrate using a pipette or syringe (§ 81) thereby providing the means for introducing and extracting liquid as claimed and as define by the instant specification.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 8-9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al (2004/0119013, filed 23 December 2002) in view of Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001).

Regarding Claims 1-3, 8-9 and 16, Schleifer teaches that a variety of analytes are analyzed within the work zones (¶ 76-77) but does not teach that the zones are functionalized with probes for analyte capture and analysis.

However, Brennan teaches a similar device comprising a substrate in the work box comprising an active surface that is non-wetting (6) a plurality of work zones on the active surface, each surrounded by a border that is non-wetting wherein the borders are not touching and have no common edge (Fig. 3) wherein the opening are arranged for introducing fluid to cover the surface of the substrate (flooded) and the borders have a geometry such that when the liquid of interest is extracted, a drop of liquid remains in contact with the work zone (Column 7, lines 37-59 and Column 8, lines 45-57).

Brennan further teaches the zone is functionalized with an oligonucleotide probe to interacting with a target (Example 4, Column 9) and wherein the borders are wetting for the liquid of interest as illustrated by the droplet contact of the border (Fig.3).

Brennan teaches that functionalizing the regions with known sequences provides for unambiguous determination of the target sequence (Column 3, lines 9-19).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the zones of Schleifer by functionalizing the zones with capture oligonucleotides as taught by Brennan. The artisan would have been motivated to do with a reasonable expectation of success based on the teaching of Brennan. The artisan would have been further motivated to do so for the benefit of unambiguous determination of the target sequence as desired in the art (Brennan, Column 3, lines 9-19).

8. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al (2004/0119013, filed 23 December 2002) in view of Heller (U.S. Patent No. 6,017,696, issued 25 January 2000) and Ikeda et al (U.S. Patent No. 5,582,697, issued 10 December 1996).

Regarding Claim 4, Schleifer teaches the substrate is a metal and/or electrically conductive (¶ 45) but does not teach an electrochemical microcell.

However, Heller teaches these elements wherein substrates comprise a metal (Column 15, lines 28-30) and further teaches that it is advantageous to construct an electrochemical microcell in order to extract specific molecules from a sample (Column 12 lines 35-54). Heller further teaches numerous advantages provided by the electrodes including stringency control, rapid transport target molecules and rapid

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removal of non-specific materials (Column 24, 19-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Brennan by constructing an electrochemical microcell in order to extract specific molecules from a sample as desired in the art (Heller, Column 12, lines 35-45).

Regarding Claim 6, Heller teaches the advantages of using electrode work zones as discussed above regarding Claim 4. While Heller does not specifically teach that the electrodes actuate, Ikeda teaches a similar biosensor wherein the sample detection occurs via electrode actuator (Example 3). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the actuation of Ikeda to the device of Schleifer and/or Heller. One of ordinary skill in the art would have been motivated to do so based on its well-known use in the art as taught by Ikeda.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al (2004/0119013, filed 23 December 2002)

Regarding Claim 15, Schleifer teaches the borders "may assume a variety of different shapes... from simple to complex" (¶ 52) and further teaches the width or diameter may change from top to bottom (¶ 58) but the reference is silent regarding specific shapes in cross section.

However, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to provide the fluid retaining structures of Schleifer with

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any shape in cross section e.g. triangular based on the dimensional changes suggested by the reference. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the structures to obtain those instantly claimed because the ordinary artisan would have expected the work zones to function equally regardless the shape based on the variety of possible configurations taught by Schleifer.

The courts have stated that claimed dimensions of a known device do not distinguish over the prior art device when the claimed device would not perform differently from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

10. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al (2004/0119013, filed 23 December 2002) in view of Brennan (U.S. Patent No. 6,210,894, issued 3 April 2001) and Yuen (U.S. Patent Application Publication No. 2002/0168624, published 14 November 2002).

Regarding Claims 18-22, Schleifer teaches the device wherein the sample is delivered to the substrate using any convenient protocol e.g. pipette or syringe (§ 81) but does not teach a pump for injecting the liquid.

However, pumps for injecting liquids into reaction devices were well known in the art at the time the invention was made as taught by Brennan.

Brennan also teaches the similar device comprising inlet (1) and outlet ports (2) wherein the inlet is connect to the reagent manifold (Fig. 7). Brennan further teaches the assembly is enclosed in a glove box which can be evacuated or purged with argon e.g. positive displacement or flushing (Column 8, lines 58-64) which clearly suggests a pump and/or vacuum is attached to evacuate or purge the chamber. While the reference does not specifically teach a pump and vacuum these tools were well known in the art for evacuating and purging hybridization chambers as taught by Yuen (§ 35, 42). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the well known pump and vacuum to the device of Schleifer and/or Brennan. One of ordinary skill in the art would have been motivated to do so based on the well known use of these elements as taught by Yuen (§ 35, 42).

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

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from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-22, 25 and 33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-39 of copending Application No. 10/576,345 (2007/0207055). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to substrates with capture zones and surrounding borders. The claim sets merely differ in the arrangement of limitations within the claim sets. For example, independent Claim 1 of the instant claims defines the substrate in a work box while

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dependent Claim 33 of the '345 set defines this element. Therefore the claim sets define inventions that are not patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

13. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nguyen can be reached on (571) 272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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BJ Forman  
Primary Examiner  
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/BJ Forman/  
Primary Examiner, Art Unit 1634